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**REMARKS****I. Preliminary Remarks.**

The claims are subject to a restriction requirement. Applicants chose, with traverse, to prosecute Group I, claims 30-41, 46, 47, 54, 55, 60-68, 73, and 74, drawn to an attenuated bovine viral diarrhea virus (BVDV) and nucleic acids encoding such, classified in class 435, subclass 235.1. In the Office Action, claims 35 and 37 are allowed. Claims 30-34, 36, 38-41, 46, 47, 54, 55, 60-68, 73, and 74 are rejected.

After the filing of this Response, claims 35 and 37 are allowed; claims 77-88 are new; claims 42-45, 48-53, 56-59, 69-72, and 75-76 are withdrawn; and claims 1-34, 36, 38-41, 46-47, 54-55, 60-68, and 73-74 are canceled. Support for the new claims is found throughout the specification, including the original claims. The new claims do not add new matter. In addition, amendments to the specification do not add new matter. Reconsideration and withdrawal of the rejections and objections are solicited for the reasons set out below.

This response is timely filed with a one-month extension of time. The USPTO is given authorization to charge Deposit Account No. 21-0718 for any fees necessary with the submission of this Response.

**II. Amendments to the Specification.****A. The Objection Due to Informalities May Properly Be Withdrawn.**

In the Office Action, part 7, the Examiner stated that the "amendment to the specification submitted on February 2, 2006 does not comply with the requirements of 37 CFR 1.121. The amendment does not show the changes made to the application relative to the immediately prior version of the specification... Applicant is required to present a new version of the amendment showing the changes relative to the immediately prior versions of the indicated paragraphs."

The paragraphs presented in the Response mailed on March 1, 2005 for the text on page 2, lines 27-34, and on page 5, lines 13-23, contain the information that was desired by the Applicants. Thus, no new changes were desired for these paragraphs in the February 22, 2006 Response. They are used in section II. B. (below) as found in the Response mailed on March 1, 2005, and then amended in response to this Office Action.

The paragraphs presented in the Response mailed on October 10, 2005 for the text on page 13, lines 16-20, and on page 15, lines 6-13, contain the information that was desired by the

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Applicants. Thus, no new changes were desired for these paragraphs in the February 22, 2006 Response. They are used in section II. B. (below) as found in the Response mailed on October 10, 2005, and then amended in response to this Office Action.

Applicants believe that the requirements of 37 CFR 1.121 have been met. Applicants respectfully request withdrawal of this objection.

**B. The Objection Due to Introduction of New Matter May Properly Be Withdrawn.**

In the Office Action, part 6, the Examiner stated that "the amendments filed March 1, 2005 and February 22, 2006 are objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure." The Applicants respectfully traverse this rejection.

The paragraphs found on page 2, lines 27-34, and on page 5, lines 13-23, are presented in the section above entitled "**Amendments to the Specification**" as found in the Response mailed on March 1, 2005 but with the crossed out text and the underlines removed, and then amended in response to this Office Action (see page 2, items 1 and 2). These changes return the specification to the originally filed text.

The paragraphs found on page 13, lines 16-20, and page 15, lines 6-13, are presented in the section above entitled "**Amendments to the Specification**" as found in the Response mailed on October 10, 2005 but with the crossed out text and the underlines removed, and then amended in response to this Office Action (see pages 2 and 3, items 3 and 4). These changes return the specification to the originally filed text.

Applicants believe that the requirements of 37 CFR 132(a) have been met. Applicants respectfully request withdrawal of this objection and entry of the amendments.

**III. Claim Objections and Rejections.**

**A. The Objection to Claims 30 and 31 May Properly Be Withdrawn.**

Claims 30 and 31 were objected to because they use the term "lease". These claims have been canceled (See listing of claims above), thus rendering this objection moot. Withdrawal of the objection is respectfully requested.

**B. The Non-Statutory Subject Matter Rejection of Claims 39, 40, 63, and 64 under 35 U.S.C. §101 May Properly Be Withdrawn.**

The Examiner rejected claims 39, 40, 63, and 64 under 35 U.S.C. §101 as being directed to non-statutory subject matter. The Examiner states that "these claims are drawn to cells

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transformed with a vector. Because the claims are drawn to cells, and not to isolated cells, the claims read on human beings." Examiner suggested that the claims be amended to read on - - isolated cells- -. Applicants have canceled claims 39, 40, 63, and 64; the new claims that encompass cells transformed or transfected with a vector read on an isolated cell (see claims 85 and 86, above). Thus, this rejection has been rendered moot. Applicants respectfully request withdrawal of this rejection.

**C. The Indefiniteness Rejection of Claims 31, 60-68, 73, and 74 under 35 U.S.C. §112, Second Paragraph, May Properly Be Withdrawn.**

The Examiner rejected claims 31, 60-68, 73, and 74 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regard as the invention. These claims are rejected on two grounds. The Applicants respectfully traverse this rejection.

The Examiner states that for the first ground, "It is not clear from the claims if the claims are intended to be directed to the attenuated virus of SEQ ID NO: 11 (BVDVN6- disclosed on page 7), or on any attenuated BVDV virus comprising a genome with up to the 308 base pairs of the N<sup>pro</sup> sequence present in SEQ ID NO: 11." Claims 31, 60-68, 73, and 74 have been canceled (see listing of claims above), thus, this rejection has been rendered moot. Applicants believe that the new claims clearly define Applicants' invention. Applicants request withdrawal of this rejection.

The Examiner states that for the second ground, "Because only 308 base pairs are present in the N<sup>pro</sup> sequence of claim 31, it is not clear how claim 60 can limit the N<sup>pro</sup> sequence therein to embodiments comprising more than 308 base pairs." Applicants have canceled claim 60 (see listing of claims above), thus rendering this rejection moot. Applicants request withdrawal of this rejection.

**D. The Written Description Rejection of Claims 30-34, 36, 38-41, 46, 47, 54, 55, 60-68, 73, and 74 under 35 U.S.C. §112, First Paragraph, May Properly Be Withdrawn.**

Claims 30-34, 36, 38-41, 46, 47, 54, 55, 60-68, 73, and 74 were rejected under 35 U.S.C. §112, First Paragraph, as "failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the

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application was filed, had possession of the claimed invention. These claims read on a genus of attenuated bovine viral diarrhea viruses, the viruses comprising a mutated N<sup>pro</sup> coding sequence comprising an intact 5' region of at least 36 (or 310) base pairs, wherein the mutated N<sup>pro</sup> coding sequence encodes an inactive N<sup>pro</sup> protein. ... Support for a genus is generally found where the applicant has provided a number of examples sufficient so that one in the art would recognize from the specification the scope of what is being claimed. In the present case, the Applicant has provided only one species of the claimed invention the mutated genomic sequence of SEQ ID NO: 11, in which the N<sup>pro</sup> sequence is truncated at nucleotide 308 (504-196). See, page 7.” Applicants traverse this rejection.

Applicants have canceled claims 30-34, 36, 38-41, 46, 47, 54, 55, 60-68, 73, and 74, and believe new claims 77-88 are fully supported by the specification.

Based on the arguments presented above, Applicants respectfully submit that the rejection of claims 30-34, 36, 38-41, 46, 47, 54, 55, 60-68, 73, and 74 under 35 U.S.C. §112, First Paragraph, may be properly withdrawn. Applicant respectfully requests withdrawal of this rejection.

**E. The Obviousness Rejection of Claims 30, 33, 36, 38-41, 46, 47, 54, and 55 under 35 U.S.C. §103(a) May Properly Be Withdrawn.**

Claims 30, 33, 36, 38-41, 46, 47, 54 and 55 were rejected under 35 U.S.C. 103(a) as being unpatentable over Behrens et al. (Journal of Virology. 1998; 72 (3): 2364-372). Applicants respectfully traverse this rejection.

As stated in the MPEP (§2141), to support an obviousness rejection, four basic criteria must be met. These are (A) The claimed invention must be considered as a whole; (B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination; (C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and (D) Reasonable expectation of success is the standard with which obviousness is determined. Clearly for prior art to render an invention obvious, it must render obvious the whole invention and not merely some part of the invention (*In re Antonie* 559 F.2d 618, 620, 195 USPQ 6,8 (CCPA 1997)). The prior art must also be considered as a whole including parts that teach away from Applicant's

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invention. Applicant respectfully submits that these criteria are not met in the Examiner's rejections.

The present invention relates to the insertion of a ubiquitin gene sequence in the 3' region of the N<sup>pro</sup> gene and involves the construction of infectious BVD viral particles. The recombinant viral genome contains all twelve of the BVD viral genes, including both the structural and nonstructural genes. Conversely, the Behrens reference teaches the insertion of a ubiquitin gene sequence in the defective interfering truncated BVD viral genome comprising only five of the 12 genes of the BVD viral genome.

Examiner states that "With respect to claims 46, 47, 54, and 55, these claims are drawn to immunogenic compositions comprising the viruses and a "veterinarily-acceptable carrier." The application provides no definition as to what constitutes such a carrier. Because there is no such definition, the term is read as including any carrier that could be administered to an animal. The reference teaches the indicated viruses in cell cultures. As there is nothing in the claims to exclude such composition from the claimed compositions, these compositions are deemed to meet the claim limitations." Applicants respectfully traverse this rejection.

New claims 79-80 and 87-88 (which correspond to prior claims 46-47 and 54-55) are drawn to immunogenic or vaccine compositions comprising a veterinarily-acceptable carrier. Such a carrier is thoroughly described in the specification (see page 11, lines 16-30). This description does not include tissue culture media as a veterinarily-acceptable carrier, which is the medium used in Behrens.

Based on the arguments presented above, Applicants respectfully submit that the rejection of claims 30, 33, 36, 38-42, 44, 46, 47, 54 and 55 under 35 USC 103(a) may be properly withdrawn. Applicant respectfully requests withdrawal of this rejection.

**F. Allowable Subject Matter.**

Claims 35 and 37 are allowed.

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**IV. Conclusion.**

In view of the amendments and remarks made herein, Applicants respectfully submit that claims 35, 37, and 77-88 are in condition for allowance and request notification of same.

Respectfully submitted,

  
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